

BEHAVIOR AND FOOD HABITS OF SENNETT'S
WHITE-TAILED HAWK IN TEXAS

BY JAMES O. STEVENSON AND LOGAN H. MEITZEN *

ON the huisache- and mesquite-dotted prairies of coastal Texas, Sennett's White-tailed Hawk (*Buteo albicaudatus hypospodius*) is a rather common raptor. The species ranges from Argentina north, through Central America, to Texas; the subspecies *hypospodius* occurs from Colombia and Venezuela to southern Texas and is a permanent resident throughout most of its range in the United States. Statements in some of the more recent literature confine this hawk's range, in the United States, to the lower Rio Grande valley (e.g. Peters, 1931:228). Strecker (1912:27) pointed out that the White-tail was "not uncommon as far north as Bee and Refugio counties," and Bent (1937:221) stated that the range "extends north to southern Texas (Marfa, Boquillas, Bee County, and Calhoun County)." Other, earlier, references do not mention the occurrence of this hawk north of these limits, but, since it is a regular breeding bird in Colorado and Harris counties and the Galveston Bay region, there is reason to believe that the range of Sennett's White-tailed Hawk has been extended northeastward in fairly recent years. The birds prefer open prairie lands and use the scattered trees and bushes for nesting.

Most of the following notes were obtained by Stevenson at the Aransas National Wildlife Refuge, Aransas and Refugio counties. Meitzen added data for White-tails inhabiting the coastal region from Calhoun County north to Houston and Galveston Bay.

General behavior. On the Aransas Refuge, five pairs of adult hawks were in residence from October 1938 to October 1941, each pair occupying the same general area every spring for nesting. These territories consisted of the more open prairie rather than of prairie broken by brushlands or oak mottes.

The White-tail is generally shy and difficult to approach, at least during the nesting season. If disturbed by man, adults may abandon a nest that is under construction or even a nest that contains eggs, but visitors to a nest that contains young are tolerated. Adults usually circled 100 feet or more above a nest while we visited it. They were generally quiet, but sometimes they gave a *kil-la* call, repeating it a number of times.

This hawk, ordinarily, is unaggressive. Only once was a White-tailed Hawk seen in combat with another bird that was not potential prey. Everett Beaty, a Refuge employee, observed a pair, together with a full-grown juvenile, attack a Red-tailed Hawk (*Buteo jamaicensis*)

* Photographs, by James O. Stevenson, courtesy of the Fish and Wildlife Service.

and put it to rout. One pair of hawks nested within 30 feet of a Scissor-tailed Flycatcher's (*Muscivora forficata*) nest which contained eggs. There was no sign of antagonism between these usually pugnacious flycatchers and the hawks. The only White-tailed Hawks which showed any positive aggressiveness toward man was a pair which nested near Salado Mill, on the Refuge, in 1941. Whenever the nest was inspected by Beaty, even before the young hatched, one bird, presumably the female, would dive at him silently from behind, swerving upward when a foot or two above him.

Hudson (1920:45-46) describes flocks of White-tailed Hawks in migration on the Argentine pampas. These flocks usually consisted of from 30 to 100 birds, but sometimes contained 1,000 to 2,000 individuals. We have never observed large flocks of White-tails in Texas but some increase—presumably birds from the northernmost breeding grounds—was noted in the normal population of the Refuge and vicinity in autumn and winter.

T. T. Waddell (letter of April 2, 1943) writes that the species comes to the prairies of Colorado County about the last of November or the first of December each year. These prairies are in part fallow rice fields crossed by small willow-bordered creeks. The birds stay until January 1 to 20, then move to the edge of the timber, where scrub live-oak borders the timber, to nest. Nesting may start by January 20, but sometimes it is as late as March before incubation begins. Two pairs come to the same locality every fall, use the same telephone poles as perches during the latter part of November, December, and part of January, and go to the same areas to nest.

Nesting. In the spring of 1940 and 1941, Beaty and Stevenson followed the progress of eight nests on the Refuge. These nests, with one exception, were placed from 8 to 12 feet above the ground in the tops of blackjack or live oaks. The only nest which was not situated in a tree on the open prairie was one located 30 feet up in the top of a live-oak within an oak grove. Meitzen found 9 nests in scrub live-oak (5-8 feet up) near Kemah, Galveston County, in March 1941. One nest which he found near Alvin, Brazoria County, in April 1946, was constructed in the topmost dead branches of a 40-foot cottonwood tree. This appears to be a record nesting height. Burrows (1917:78) collected eggs from 30 nests in south Texas between the Nueces River and the Rio Grande. He found that the average elevation of the top of the nest was about $7\frac{1}{2}$ feet (extremes $11\frac{1}{2}$ to 14 feet). Bendire (1892:235), quoting B. F. Goss, gives the elevation (15 nests) as "generally not higher than 6 feet," and Benners (1887:68) gives heights from 5 to 7 feet. These low elevations may be explained by the fact that the only available sites in many localities are small bushes. The "record high" for a nest is given by Bent (1937:218) as 15 feet.

Each nest at the Refuge was placed at the extreme top of a tree, generally in the center of the crown. Nests were constructed of large

sticks and were lined with grasses (often with roots attached) to form a substantial, well-cupped nest. Nests were sometimes rehabilitated for use year after year. Sometimes one was usurped by Great Horned Owls (*Bubo virginianus*), in which case another nest near by was used by the hawks. Nests were sometimes visited and repaired by a pair in February or earlier, long before eggs were deposited. Nests in mesquite trees, found in Calhoun County, were sometimes occupied in February or early March, before the trees leafed out, at which time the nests were particularly conspicuous. Nests on the Refuge had very little concealment from above, but those in live-oaks or those for which grape vines offered protection were not readily visible from the sides. In June 1942, Meitzen found an occupied nest which was constructed of sticks and many pieces of barbed wire. This nest was located in the top of a 25-foot pecan tree in open country, six miles south of Alta Loma, Galveston County.

On the Refuge, egg-laying began in late March and early April 1940, and in early March 1941. Of the 8 nests examined, 6 held 2 eggs and 2 held 3 eggs. Meitzen found 5 nests in Calhoun and Galveston counties in 1941, of which 3 held 2 eggs and 2 held 3 eggs. In 1940, egg-laying began in Calhoun County in the second week of March. The eggs are dull white, generally spotted with pale brown. According to Bent (1937:218), 2 is the usual number of eggs in a set.

No information was obtained on the length of the incubation period. Young are hatched about one day apart. The nestling's eyes are open at hatching. The downy young "is an odd-looking chick, quite different from other young hawks" (Bent, 1937:218). It is covered with a dirty-gray, or brownish, down and has a black mask on the face. Colors of



Figure 1. Sennett's White-tailed Hawks, age 14 days. Aransas Refuge, Texas
April 25, 1941

soft parts of a 4-day-old bird were as follows: bill—black; cere—greenish-blue, close to cerulean; iris—dark brown; feet—lemon-yellow. Development of the young is shown in Figures 1 to 3.

At an early age (10 to 12 days or younger), the nestling begins to peer frequently at the sky and often calls. The young chick has two notes: a cat-like *mee-ow* and a sucking *tsick* note. The nests were kept clean of droppings and, nearly always, of pellets. A young bird, 12 days old, was observed several times as it moved awkwardly to the side of the nest, turned, and voided over the edge. This behavior has been described in "half grown" Eastern Red-tailed Hawks by Bent (1937:154).

Meitzen blamed Great-tailed Grackles (*Cassidix mexicanus*) for loss of eggs in one White-tail nest in Galveston County, and farmers for egg destruction at two other nests. White-tails on the Refuge had very poor success in rearing young. Of 8 nests under study, eggs were broken in one, presumably by Great-tailed Grackles. Young hatched successfully in 7 nests, but only 3 birds (2 from one nest) were reared to flight stage. Caracaras (*Polyborus cheriway*) were the cause of nestling loss in one instance and unidentified predators the cause in four others. Of the above-mentioned young, one left the nest when 47 days old, the others, somewhat prematurely, at 35 days of age, the day they were banded.

Food and feeding habits. Bent (1937:220) states on the authority of various observers that "cotton rats, quails, snakes, lizards, frogs, grasshoppers and beetles" are eaten by this hawk in the United States. Cottam and Knappen (1939:150) analyzed four stomachs and found a variety of food items—mainly insects, snakes, and frogs. One stomach



Figure 2. Sennett's White-tailed Hawk, age 30 days. Aransas Refuge, Texas
May 10, 1941

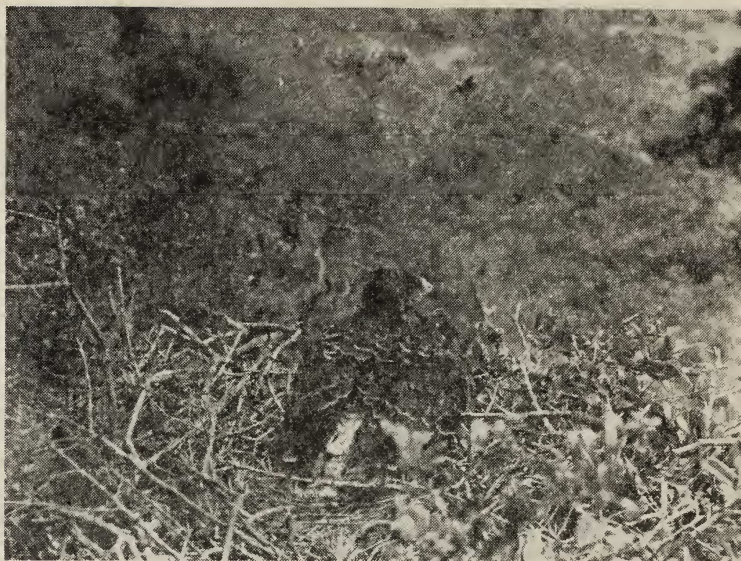


Figure 3. Sennett's White-tailed Hawk, age 6 weeks. Aransas Refuge, Texas
May 23, 1941

contained, among other prey, a young quail chick. Burrows (1917) found no evidence that White-tailed Hawks fed on other birds and concluded that the diet was largely confined to rabbits, although some wood rats were taken.

As is the case (Errington and Breckenridge, 1936:844) for the Marsh Hawk (*Circus cyaneus*), White-tailed Hawks feed upon whatever is found conveniently available. Immatures of various species of prey bear the brunt of White-tailed Hawk predation during the nesting season (see below). White-tails are apparently but slightly selective in preying, at least during the time they are pressed to supply food for their young.

In 1940 and 1941, notes were obtained on the food brought to nestlings in six nests on the Refuge. No quantitative study of nestling food habits was attempted because of the difficulties of obtaining pellets. No pellets were found beneath the nests, and only two or three in nests during the period of study. Errington (1930) has discussed the reasons that pellet analysis of buteonines (including nestlings) is impracticable.

The following notes give some indication of the prey taken by adult White-tailed Hawks to feed their young. On 21 visits to 6 nests, the following carcasses, or portions thereof, were noted: skink (*Eumeces septentrionalis*)—2; fence lizard (*Sceloporus undulatus*)—2; glass snake (*Ophisaurus ventralis*)—1; bull snake (*Pituophis sayi*)—1; garter snake (*Thamnophis sirtalis*)—2; Bob-white (*Colinus virginianus*), adult—5; Meadowlark (*Sturnella magna*), nestling—1;

Mockingbird (*Mimus polyglottos*), juvenile—1; cottontail (*Sylvilagus floridanus chapmani*), mainly juvenile—5; pocket gopher (*Geomys breviceps attwateri*)—2; white-footed mouse (*Peromyscus leucopus texanus*)—2.

The incidence of birds in the diet of nestling hawks is greater than the literature on *hypospodius* indicates. Meitzen found that food brought to a nest near Dickinson, Galveston County, in 1941, consisted principally of rabbits, rats, and pocket gophers. The birds brought in were King Rail (*Rallus elegans*), Meadowlark, and Dickcissel (*Spiza americana*). No remains of Bob-white were noted at the nest. On June 20, 1942, Meitzen collected evidence of the following prey at a nest containing a 3-week-old White-tail, six miles south of Alta Loma: blue racer (*Coluber constrictor flaviventris*); Clapper Rail (*Rallus longirostris*), juvenile; Meadowlark, juvenile; Seaside Sparrow (*Ammodramos maritima*), nestling; cottontail, probably an immature. We are indebted to F. M. Uhler, J. W. Aldrich, and H. H. T. Jackson, of the Fish and Wildlife Service, for the identification of material from this nest.

The stomach of a specimen (an adult female) in the Chicago Natural History Museum, collected at Rockport, Texas, February 4, 1909, contained a Meadowlark. G. H. Blanchard of Brownsville, Texas, informed Stevenson that White-tailed Hawks in Cameron County take birds to feed their nestlings whenever they are easy to obtain. He has watched hawks bring juvenile Meadowlarks to the nest and, in one instance, a Blue-winged Teal (*Anas discors*), probably a cripple. In the autumn of 1944, Refuge manager Earl W. Craven surprised a White-tailed Hawk which was grasping a Road-runner (*Geococcyx californianus*) on the ground, endeavoring to fly off with it. The hawk was unable to carry the bird and dropped it. Upon examining the Road-runner, Craven found that it had been freshly killed. W. B. Davis (letter of April 7, 1943) writes that the museum collection of Texas A. and M. College has a mole (*Scalopus aquaticus cryptus*) which was found in the stomach of an adult White-tail, collected 20 miles south of Eagle Lake, Colorado County, May 30, 1940.

At various times of the year, other than the nesting season, White-tailed Hawks were observed on the Refuge capturing one or more individuals of the following animals for food: grasshoppers (*Acrididae*), rough-green snake (*Opheodrys aestivus*), garter snake, pocket gopher, cotton rat (*Sigmodon hispidus texianus*), pocket mouse (*Perognathus h. hispidus*), and fox squirrel (*Sciurus niger limitis*). Smaller items of prey, such as lizards and mice, were usually carried in the beak; cotton-tails and squirrels in the talons. White-tailed Hawks were noted feeding on carrion on two occasions. Three White-tails (an adult and two full-grown immatures) were seen feeding on a dead cow near Palacios, Texas, in October 1940, and one was observed eating a dead rattlesnake (*Crotalus atrox*) in January 1939.

An interesting note on White-tailed Hawk behavior at the Refuge was obtained by Beaty, September 18, 1940. As Beaty approached a fenced 8-acre field which he was preparing for grain planting, he noticed two adult White-tails hovering over doveweeds (*Croton*) near the center of the field. The hawks evidently had spotted an animal and were trying to capture it. The hawks flew to near-by fenceposts and perched there for almost two hours while Beaty drove a tractor, with disc-harrow attachment, around the field toward its center. Finally most of the weeds were disked and flattened. A jackrabbit (*Lepus californicus merriami*) was flushed and was hit almost immediately by one of the hawks which, unable to lift the rabbit, pinned it to the ground. Both hawks then proceeded to eat the rabbit.

White-tailed Hawks invariably congregate at prairie fires on the Texas coast in search of food. As a management measure, a 150-acre tract on the Refuge was burned on January 18, 1939. The cover in this area consisted principally of sacahuiste grass (*Spartina spartinae*). This grass burns "like kerosene," making a hot fire whose smoke can be seen for miles. Refuge personnel set fire to the grass along one side of the field at 11:00 a.m. The first White-tail appeared at 11:25 a.m. and, by 1:15 p.m., some 36 raptors of 6 species had arrived. This number included 16 adult and 4 immature White-tailed Hawks. From our knowledge of White-tail distribution, it was our opinion that the fire attracted all, or nearly all, the adults present within a radius of 10 miles. The White-tails coursed back and forth parallel to the fire line and, at times, dived through the smoke for cotton rats, pocket mice, and grasshoppers which moved over the exposed, charred, ground. In October 1941, another fire in the same field attracted 8 immature White-tailed Hawks, one of which was observed to capture a cotton rat.

LITERATURE CITED

- BENDIRE, CHARLES
1892 Life histories of North American birds. *U.S. Nat. Mus. Spec. Bull.* No. 1.
- BENNETT, G. B.
1887 A collecting trip in Texas. *Ornith. and Oöl.*, 12:65-69.
- BENT, ARTHUR CLEVELAND
1937 Life histories of North American birds of prey (part 1). *U.S. Nat. Mus. Bull.* 167.
- BURROWS, D. B.
1917 White-tailed Hawk. *Oöl.*, 34:78-81.
- COTTAM, CLARENCE, and PHOEBE KNAPPEN
1939 Food of some uncommon North American birds. *Auk*, 56:138-169.
- ERRINGTON, PAUL L.
1930 The pellet analysis method of raptor food habits study. *Condor*, 32:292-296.
- ERRINGTON, PAUL L., and W. J. BRECKENRIDGE
1936 Food habits of Marsh Hawks in the glaciated prairie region of north-central United States. *Amer. Midl. Nat.*, 17:831-848.

HUDSON, W. H.

1920 Birds of La Plata (vol. 2). E. P. Dutton and Co., N.Y.

PETERS, JAMES L.

1931 Check-list of birds of the world (vol. 1). Harvard Univ. Press,
Cambridge, Mass.

STRECKER, JOHN K., JR.

1912 The birds of Texas. *Baylor Univ. Bull.*, 15:1-70.

FISH AND WILDLIFE SERVICE, CHICAGO, ILLINOIS

2221 REYNOLDS STREET, HOUSTON, TEXAS.